

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
24 March 2005 (24.03.2005)

PCT

(10) International Publication Number
WO 2005/026043 A2

(51) International Patent Classification⁷: C01B [US/US]; 8901 Rob's Place, Albuquerque, NM 87122 (US).

(21) International Application Number: PCT/US2004/024683 (74) Agents: GREENBERG TRAURIG, LLP et al.; 2450 Colorado Avenue, Suite 400 E, Santa Monica, CA 90404 (US).

(22) International Filing Date: 29 July 2004 (29.07.2004)

(25) Filing Language: English (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

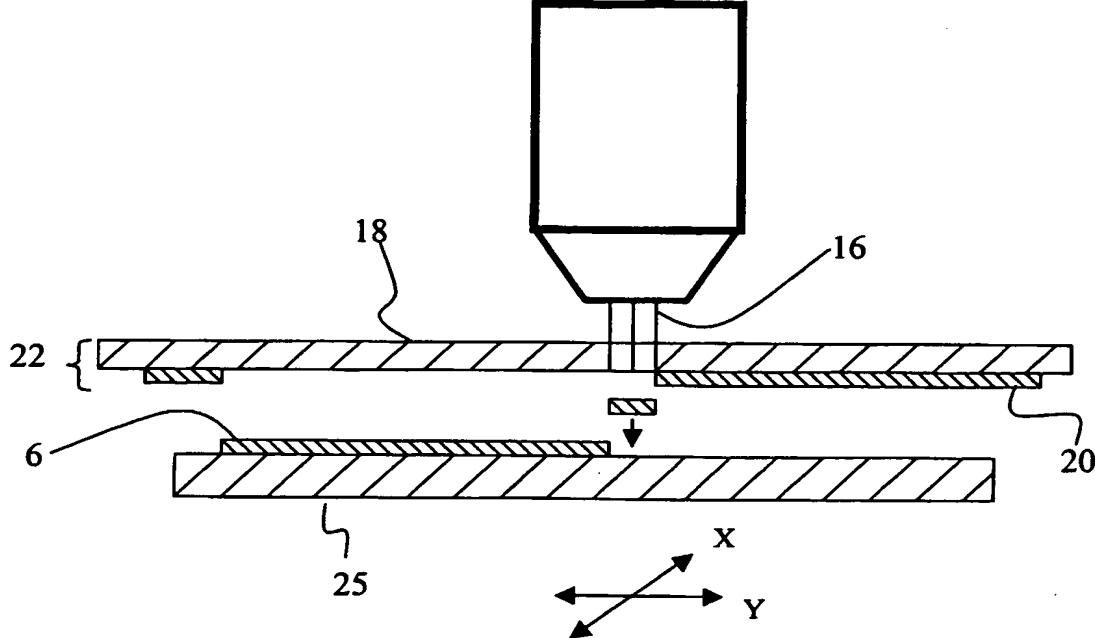
(30) Priority Data: 60/491,636 29 July 2003 (29.07.2003) US (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

(71) Applicant (for all designated States except US): INTELLIGENT ENERGY, INC. [US/US]; 2955 Redondo Avenue, Long Beach, CA 90806 (US).

(72) Inventors; and (75) Inventors/Applicants (for US only): CHELLAPPA, Anand [IN/US]; 8909 Opportunity Dr. NE, Albuquerque, NM 87109 (US). VENCILL, Tom [US/US]; 4916 Summer Ave, Albuquerque, NM 87110 (US). MILLER, Doyle

[Continued on next page]

(54) Title: METHODS FOR PROVIDING THIN HYDROGEN SEPARATION MEMBRANES AND ASSOCIATED USES



WO 2005/026043 A2

(57) Abstract: This present disclosure is generally related to providing thin hydrogen separation membranes coated on porous substrates that are useful in membrane steam reformers and methods for making same. These reformers can be integrated with proton exchange membrane (PEM) fuel cells to form power systems.

WO 2005/026043 A2



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *without international search report and to be republished
upon receipt of that report*